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10. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 760 \text{ nm}$.

11. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 825 \text{ nm}$.

12. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 885 \text{ nm}$.

13. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 905 \text{ nm}$.

14. (Twice Amended) The objective as defined in Claim 8, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 780 \text{ nm}$.

15. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 785 \text{ nm}$.

16. (Twice Amended) The objective as defined in Claim 8, wherein the DUV focus includes a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 845 \text{ nm}$.

19. (Amended) A DUV-capable microscope, comprising:

an objective comprising a plurality of lens elements, wherein the objective has a DUV focus at a DUV wavelength, λ_{DUV} 235 nm, wherein the DUV focus encompasses a DUV wavelength region $\lambda_{\text{DUV}} \pm \Delta\lambda$, where $\Delta\lambda = 8$ nm, wherein the objective has an IR focus for an IR wavelength λ_{IR} 760 nm at the same focal point as the DUV focus at λ_{DUV} , and wherein a penultimate lens element comprises a concave configuration on both sides, wherein an object-side outer radius of the penultimate element is smaller than its image-side outer radius; and

an IR laser autofocus system in optical communication with the objective to provide the IR wavelength λ_{IR} and auto-focussing.

22. (Amended) A microscope objective, comprising:

a converging first lens disposed closest to an object being imaged;
a converging second lens disposed along an optical axis after the first lens;
a first doublet lens disposed along the optical axis after the second lens;
a first triplet lens disposed along the optical axis after the first doublet lens;
a second triplet lens disposed along the optical axis after the first triplet lens;
a converging lens group comprising one or more lenses disposed along the optical axis after the second triplet lens;

a diverging penultimate lens comprising concave outer sides, wherein an object-side outer radius is smaller than an image-side outer radius disposed along the optical axis after the converging lens group; and

a diverging doublet lens disposed after the penultimate lens,
wherein the objective has a focal length of 1.6 mm or less at a DUV wavelength, λ_{DUV} 235 nm, and an IR wavelength, λ_{IR} 760 nm, and wherein a numerical aperture of the objective is at least 0.8.

23. (Amended) The objective as defined in claim 22, wherein the objective has a DUV focus at a DUV wavelength, λ_{DUV} 235 nm, wherein the DUV focus encompasses a DUV wavelength region $\lambda_{\text{DUV}} \pm \Delta\lambda$, where $\Delta\lambda = 8$ nm, wherein the

D3
C4
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objective has an IR focus for an IR wavelength λ_{IR} 760 nm at the same focal point as the DUV focus at λ_{DUV} .
